Employing Technology Towards the Improvement of Education Delivery in Deep Rural Areas

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1. About the Bulungula Incubator

Our work in the Xhora Mouth Administrative Area began with the establishment of the Bulungula Lodge in 2004. The Lodge is community owned, Fair Trade accredited, and uses renewable energy, composting toilets and harvests sustainable rain and ground water sources. In 2007, an appeal to previous guests of the Lodge seed funded an NGO, the Bulungula Incubator which we established in 2007 to address the challenges of rural poverty in our community while promoting and preserving the positive effects of the traditional African lifestyle and culture. This remote rural area fell into a backwater area of the Transkei “homeland” during Apartheid. Development in the homelands, especially of the rural areas, was practically non-existent. Little has changed post democracy, and still today basic government services such as roads, clean water and healthcare do not reach many villages. Formal education has always been, and remains largely extremely weak.

The Xhora Mouth Administrative Area, in which we work, is made up of four villages: Nqileni, Folokwe, Mgojweni and Tshezi located in a remote part of the Mbhashe Municipality. These four villages have a population of about 6000 people; the 2007 StatsSA Community Survey estimated the Mbashe municipality to have a population of 262 008. This is the poorest municipality of theAmathole District. 96% of households in this municipality have an income of less than R1600/month and 78% of the population is below the poverty line (an increase of
10% in a decade). 75% of the Mbhashe population have no access to clean drinking water and 74% of the population have no access to any kind of toilet. 72% of the population use firewood for cooking and 79% live in self-built mud brick houses.

In a recent survey conducted by the Bulungula Incubator we found that: in the Xhora Mouth Admin Area where we work, just over half (53.8%) of households have had at least one child die and a third of those have lost more than one child, mostly due to diarrhoea, probably caused by the lack of clean water and sanitation. Our offices are located in Nqileni village, the most remote of the four villages of Xhora Mouth. With a population of approximately 800 people, the closest clinic is a 2 hour walk away, there is no reliable access to potable drinking water, no access to electricity, no toilets and, until recently, school lessons took place under the trees. Only a handful of people from Nqileni have ever succeeded in achieving their final school year certificate. Almost all adults in the village are illiterate. For their livelihoods, the people of Nqileni are reliant on subsistence farming, government grants, wage remittances from migrant workers and, since 2004, income from the community-owned Bulungula Lodge and later from Bulungula Incubator. The health of the population is compromised not only by the inaccessibility of health care provision, but also by insufficient health knowledge, poor nutrition, poor water quality, HIV and cystercicosis. The area thus epitomises the most acute poverty challenges of the country. Despite this, it has an immense richness in other ways: there is a strong sense of community and history, the land is incredibly fertile and breathtakingly beautiful, there are still pockets of excellence in subsistence farming, and the people have a strong desire to work towards improving their situation. It is this combination of difficulties and strengths that make the Xhora Mouth Administrative Area an ideal place to develop innovative responses to rural challenges.
Since its launch in 2007, the Bulungula Incubator has developed its projects into four focus areas: Education, Basic Services, Sustainable Livelihoods and Health and Nutrition.

**Some of the achievements of the Bulungula Incubator have been to:**

1. Establish the Jujurha Education Centre
2. Establish 3 additional community-based preschools: Khanyisa Preschool in Mgojweni Village, Masiphathisane Preschool in Folokwe and, most recently, Phaphamani Preschool in Tshezi
3. Complete Phase 1 of the rehabilitation of the No-ofisi Senior Primary School
4. Develop and grow an After School Programme for primary school learners
5. Provide library facilities for children and adults
6. Launch an income generating Lemongrass and Essential Oils cooperative for 20 farmers
7. Provide young entrepreneurs with support to establish and manage their own businesses in a range of activities including: bee-keeping, sewing, poultry, photography, hospitality and hairdressing
8. Establish permaculture gardens that provide organic vegetables for hot, nutritious meals prepared daily at the Preschools, No-ofisi Primary School and for vulnerable community members
9. Protect current natural drinking water springs
10. Install rain water tanks around the 4 villages in the area
11. Drill 4 boreholes for drinking and irrigation around Nqileni Village
12. Run educational workshops on the harvesting, storing and managing of water resources
13. Pilot a study with the CSIR of the Nazava Water Unit, a filter we have found to be cost-effective and suitable for rural areas
14. Establish a Community Work Programme employing 200 community members in projects including alien vegetation removal, road and school infrastructure repair, fencing of communal grazing land.
15. Offer on site health awareness workshops, limited health facilities and voluntary HIV-testing days, in all 4 villages, in conjunction with Madwaleni Hospital and volunteer medics.
16. Facilitate on-the-job and formal training of 20 ECD practitioners from the immediate community and conduct on-site training for ECD practitioners from the surrounding villages of Hobeni, Zithulele and Keiskamma Hoek.
17. Initiate a household survey to gather in-depth demographic and socio-economic data
18. Set-up a new health point facility servicing Folokwe and Mgojweni villages for ARV distribution, HIV counselling, Ante and Post-natal care, mobile clinics, provide basic first aid, management of chronic diseases like hypertension and diabetes
19. Establish a Home based care project customising, health, nutritional and sustainable livelihoods for 450 households in the area

2. Background to our Education Programme

Education is a central focus of the integrated rural development strategy of the Bulungula Incubator. Rehabilitation of No-ofisi Senior Primary School was the project that prompted the formal incorporation of the NGO in 2007. At that time the only educational facility available was a collapsed wattle and daub structure where little teaching of any kind took place.

![The original No-ofisi School in 2007](image)

While working in this area we have found it challenging to mobilise the community to exercise their right to demand quality education for their children. Their expectations of the schools in the area are, understandably, limited to that which they have experienced themselves. Few adults in the area have ever experienced any formal education and those who have, have experienced little different to that of dysfunctional schools like No-ofisi SPS. We then established the Jujurha Education Centre (JEC) in mid 2009 as part of our efforts to demonstrate the delivery of excellent education in the area.
Although a few daycare facilities and play centres are dotted around some villages in our area, there were no institutions that offer ECD education. The positive impact of early childhood education is now widely acknowledged: a vast body of research exists to inform societies and educational institutions of its importance. The earliest of life experiences have a direct impact on the development of the brain and future lifelong cognitive ability. The value of early intervention in the lives of all children cannot be overemphasized, yet benefits increase significantly for children living in under-served populations where parents have had little formal education themselves, in environments with limited access to books and educational toys. The Jujurha Education Centre (JEC) addresses this gap with a holistic approach to early childhood education with attention to physical, social, emotional, and mental development. The JEC was established in 2009, followed by 3 additional community-based preschools: Khanyisa Preschool in Mgojweni Village, Masiphathisane Preschool in Folokwe and, most recently, Phaphamani Preschool in Tshezi.
The Centre is open to all 3-6 year-olds of Nqileni Village. In addition to this, it offers library facilities for the whole community and support for schools in the area through our After School Enrichment and Rural Schools Outreach programmes. During the establishment process of the Centre, we actively sought to build local skills, sourcing and training employees directly from the community, created permaculture gardens to supplement a planned nutrition programme, developed appropriate infrastructure in an area with no access to running water, electricity, sanitation or road access infrastructure, developed a practical curriculum of how to deliver excellent early childhood education and managed to access government funding to support the set-up and daily running costs of ECD centres.

Since its launch in mid-2009, the JEC has trained 14 ECD practitioners from the immediate area. These teachers started with no prior experience and no relevant formal qualifications. At the end of 2010, each child in the 5-6 year old class (Grade R) was formally assessed for school readiness by an independent registered psychometrist. All the children were found to be school ready, and some were found to have exceptional ability. The testing process confirmed the quality of the teacher training methods of the JEC in an environment where children come from homes with no books, educational devices, very few, if any, toys and parents who are very likely to be functionally illiterate.

The understanding of the beneficial effects of Early Childhood Development is becoming understood with growing emphasis on the first 1000 days of life: education begins at birth. In a recent article published in the New York Times, by James J. Heckman, a professor of economics at the University of Chicago and a Nobel Laureate in Economics shows that: “...success nominally attributed to the beneficial effects of education, especially graduating from college, is in truth largely a result of factors determined long before children even enter school. Improving the early environments of disadvantaged children is a promising way to reduce inequality, but conventional wisdom is to level the playing field with cash transfers, tuition assistance and raising the minimum wage. High-quality early childhood programs are great economic and social equalizers — they supplement the family lives of disadvantaged children by teaching consistent parenting and by giving children the mentoring, encouragement and support available to functioning middle-class families. Children in these programs develop foundational skills on par with those of more affluent children and create a stronger family structure for themselves. Caring parents and early stimulation are essential ingredients of successful early childhood environments.”
3. Extending ECD into the Home and Beyond the Preschool Years

Since healthcare and nutrition are critical inputs to quality Education outcomes, our Education and Health focus areas have begun to work together to complete the circle of care from pre-birth through the school going years. Our work covers the communities of 4 villages and services are open to all children and adults in the area.

Stages of influence in our Holistic Child Development Programme established by the Bulungula Incubator:

1. **Health in Pregnancy** - Monthly village based HIV testing and counseling facilities, Health workshops and home based care
2. **Community Health Points** – Village based ARV distribution, counseling and clinic services
3. **Nutrition education and home-based health** management of weight and nutrition deficiencies for 0-3 years
4. **ECD @ home** – toy boxes and training for parents in the cognitive development of 0-3 year olds
5. **Preschool centre-based ECD and nutrition management** from 0-4 years
6. **Grade R education** at the JEC and support of government schools grade R in the area
7. **After-school programmes, Library Facilities and Child and Youth Care services** for 6 years and beyond
8. Assistance for **Rural government schools** in improving the quality of education delivered in the area and support for the Vulindlela Scholarship Program.
9. Involving **Parents** in the running of our educational facilities, running workshops on topics like “You are your Child’s First Teacher” and active **advocacy** for the improvement of access to quality education and health services

Our activities towards delivering a quality Early Childhood Development Programme in more detail:
3.1 Health in Pregnancy
A child’s potential begins with the state of its mother’s health at conception. Because the first 1000 days of life have such a critical influence on how people develop across their entire lifetimes, our Education and Health focus areas have begun to work together to enhance the outcomes of our efforts in the Early Childhood Development phase. To this end, we now have 24 Home-based care providers who deliver care to the 400 households of our 4 villages in the area. These carers assist pregnant mothers with nutrition from our organic community gardens, provide information about good health in pregnancy and have been trained to identify health issues that should be referred to a clinic.

3.2 Community Health Points
There are no clinics in any of the 4 villages we work with. With help from the community we have established a Community Health Point that is serviced in partnership with the local Department of Health and the Donald Woods Foundation. The Health Point provides a venue for community members to receive ARV distributions and basic clinic services. The community of Nqileni Village have raised funds to build a second Health Point which we will assist in managing. These health points, of course, extend the work of our home-based care programme, keeping children healthy through immunisations and deworming programmes.

3.3 Nutrition Education and Homebased Health Management
Our Home-based care team have received training from the NACCW and the Philani Mentor Mothers programme in the management of nutritional deficiencies and how to monitor a child’s weight from birth in order to detect malnutrition and of course, pass this information onto the parents.

3.4 ECD @ Home
The educational training and experience gathered by the teachers and staff at the Jujurha Education Centre over the past 4 years has been applied to extend our efforts in Early Childhood Development in the area to the age group, from birth to 3 years old. With the help of experts in the area, we have put together educational toy boxes suitable for this age group and our home-based care team have already received training from the Jujurha staff and outside consultants. The ECD training needed to enable optimal use of the educational toys will be extended to our parents and the toy boxes for the 90 households in the area with infants and toddlers.

3.5 Centre-based Preschools and Nutrition Programme
From 3 years of age, all children of the 4 villages in the area that we work now have access to
a quality, daily ECD programme and a nutrition programme. The first preschool was opened in mid-2009 in Nqileni Village and over the past 2 years we have opened 3 more: the third and final one opened in July this year in Tshezi Village.

3.6 Grade R at Jujurha and Outreach to Government School programmes

The Jujurha Education Centre continues its ECD offering into the Grade R level from where a Grade R forum has been established with the 4 government schools in the area for development and support of their programmes. The experience and expertise of the Jujurha Preschool principal will be shared through that forum. Our Education Programme is active in its work on improving the quality of education delivered by the schools in the surrounding area. We are currently working on research into using Technology in Education for further support to our efforts in improving the learning environment and experience of our children.

3.7 After School Enrichment

The JEC-run After School Enrichment Programme is made available to the 215 learners of the No-ofisi Primary School. This programme was launched in 2009 for the Grade 1-3 learners and has been expanded to include all learners up to Grade 6. Afternoon sessions include opportunities for supervised play with educational toys such as Lego, puzzles, memory and matching games, other educational games, structured numeracy and literacy lessons, creative art activities, basic English, story time in the Jujurha library and the opportunity to borrow library books.

The Health programme has also collaborated with the Education focus area in providing school based programmes on HIV and other health related topics that are fun and interactive.

3.8 Rural Schools Outreach Programme

In the past our Rural Schools Outreach programme focused on infrastructure development and improvement. Although the schools in the area are still in desperately need of adequate school facilities, there has been movement from government in providing prefabricated classrooms at Xhora Mouth Primary and the rebuilding of the Noofisi Primary School which has just begun. We have therefore turned our efforts towards governance and teaching issues directly influencing the quality of education delivered. To this end we have established the Xhora Mouth Teachers Forum which has already embarked on programmes to visit and
learn from other excellent schooling programmes around the country. We hope to develop the work of the forum over time in engaging principals, teachers and SGBs in the development of a quality education product in the area.

3.9 Vulindlela Scholarship Programme
The children on the Vulindlela Scholarship Programme are progressing well in Grade 2 at Umtata International School. We will continue to support the children and parents financially and otherwise to ensure their success as they progress further. The children are developing into excellent role models and tangible evidence of the effects of good schooling.

3.10 Parent Activism and Participation in Education
Parent activism and participation in education has always been a cornerstone of our efforts in this area. Since 2009, when the JEC opened, the Preschool Principal, has run Parent Participation workshops on a range of topics within the theme: “You are Your Child's First Teacher”. The importance of educational stimulation from birth is emphasised and parents are given the opportunity to make learning equipment from locally available materials. These workshops now involve the parents of the new preschools in the surrounding villages. Our Health & Nutrition programme, through the work of our homebased care team works with parents directly at home and on health, nutrition and ECD of every child in the 4 villages.

4. Introducing our New Project: Employing Technology
Towards the Improvement of the Delivery of Education for ECD from Grade 1
Because of the low access to quality education and the low levels of literacy in the area, parents are challenged in their ability to participate in the education process. Teaching is affected by inadequate infrastructure, long distances that teachers have to travel to and from their homes on very bad roads, a lack of teaching materials and teacher motivation.

Since the inception of the Bulungula Incubator in 2007, we have approached school improvement within our Rural Schools Improvement Project through 3 strategic spokes:

1. Infrastructure Development
2. Advocacy for government action in school improvement
3. Development and strengthening of activism in education and teacher skill and motivation through Teacher Forums, School Governing Bodies and Parent Committees
It is our sense that these efforts, which have already had some key successes in the improvement of the delivery of quality education in the area, can be supplemented with available and appropriate Technology. The project will take up the excellent ECD exposure our children have had, in one of our 4 preschools, and deliver the Grade 1 curriculum through the application of proprietary educational software, using energy efficient devices that are suited to our rugged environment.

During our research process for this project, we found that while much work is being done in the country from the Grade 8 level in using technology resources to supplement teaching, there is little in the ECD learning phase. We completed an extensive survey of all the software available locally and internationally that covers the Foundation Phase curriculum and enhanced learning outcomes in Mathematics, English Literacy and Life Skills.

Our research led to the decision to begin with Mathematics using the Maths buddy (www.mathsbuddy.co.za) programme which maps the entire Grade 1 Mathematics curriculum. We have already begun to test the programme in our After-school Programme. 30 children have registered onto the pilot and are fully engaged in the process. We have approached a service provider to supply us with a program that can assess and monitor progress over time. Once we have addressed all software and hardware challenges within the pilot stage of the programme at our Centre, we will look to rolling out the program to operate during the normal school mathematics class times in the 4 schools in our area.

The project will enable the children to leapfrog the challenges of their underresourced school environment and will also make a valuable contribution in an area of educational development that we know to be groundbreaking, especially in remote, rural and underserved areas, such as ours.

*Children and teachers fully engaged in our Maths buddy pilot program*
The itemised budget below shows the project in 2 phases: Phase 1 will concentrate on a Pilot setup at Xhora Mouth Senior Primary School which has a total of 90 children in 2 classes. Once the project has been successfully implemented there, we will begin the rollout to the 3 other schools in the area, that we work with.

**BUDGET**

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